

PREVENTING AVOIDABLE HOSPITALIZATIONS FROM LONG TERM CARE  
FACILITIES THROUGH A COLLABORATIVE CARE MODEL

A PROJECT SUBMITTED TO THE SCHOOL OF NURSING & DENTAL HYGIENE,  
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## **Abstract**

**Background:** Avoidable hospital admissions can have a significant financial cost and impact on quality of life for Long Term Care (LTC) facility residents. The Ambulatory Care Sensitive (ACS) diagnoses of pneumonia, urinary tract infections, congestive heart failure, dehydration, and chronic obstructive pulmonary disease have been identified as the most common ACS diagnoses linked to avoidable hospitalizations from nursing homes.

**Methods:** An evidence based practice quality improvement project supported implementation of a collaborative care model in a LTC facility on Kauaʻi with the primary objective of reducing avoidable hospital admissions. The target population consisted of LTC facility residents aged 65 years and older with a participating medical doctor (MD). Phase 1 of the project began with facility staff in-services on four of the five main ACS conditions. Phase 2 focused on implementation of the collaborative care model.

**Outcomes:** Both phase 1 and 2 had a favorable impact on reducing hospital admissions for ACS conditions. Both staff MDs perceptions and the availability of in house diagnostic testing had a significant effect on the decision to transfer to the ER. The physical presence of a nurse practitioner (NP) provided timely face-to-face primary care visits for residents in addition to support and mentoring of LTC facility staff.

**Conclusion:** MD-NP collaboration is a significant factor in preventing hospital admissions from LTC facilities. The perception of both facility staff and MDs did reveal a variation in the decision to transfer to the ER, as did the availability of in house diagnostic testing.

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## **Chapter 1: Executive Summary**

### **Background**

Nurse practitioners (NPs) are in a position to play a key role in preventing avoidable hospitalizations by meeting the demand for higher acuity nursing home care. The Ambulatory Care Sensitive (ACS) diagnoses of pneumonia, urinary tract infections, congestive heart failure, dehydration, and chronic obstructive pulmonary disease have been identified as the most common ACS diagnoses linked to avoidable hospitalizations from nursing homes. The ACS conditions are defined as conditions for which hospitalization is preventable if appropriately managed on an ambulatory basis.

### **Purpose**

The purpose of this evidence based practice (EBP) project was to implement and test the efficacy of a collaborative practice model to reduce hospital admission of residents from a long term care (LTC) facility.

### **Literature review**

Several studies have identified ACS conditions as a significant cause of avoidable hospitalizations from nursing homes. However, these studies also implied that ACS conditions were not the only reason for hospitalizations and other significant variables impacted the decision to hospitalize. Staff perceptions were a significant determinant of hospitalization in nursing home residents. Multiple other variables have been isolated including number of physicians per facility, Do Not Resuscitate (DNR) status, the ability to provide intravenous (IV) fluid and staff mix. All these variables have

a significant impact on preventing avoidable hospitalizations. In addition, multiple studies have also shown that collaboration can improve patient outcomes.

## **Methodology**

This project was implemented in one LTC nursing facility on Kaua`i. The target population consisted of residents aged 65 and older with a participating attending physician. Quantitative baseline de-identified data on program measures was extracted from the resident charts and at 30 days post intervention and analyzed using descriptive statistics. Outcomes measures related to hospitalizations and emergency room(ER) visits were compared to benchmarks.

An EBP quality improvement (QI) project supported implementation of a collaborative care model in a LTC facility on Kaua`i with the primary objective of reducing avoidable hospital admissions. Collaboration within the interdisciplinary healthcare team focused on the medical doctor (MD), nurse practitioner (NP) and registered nurse (RN). Phase 1 of the project began with facility staff in-services on four of the five main ACS conditions. Phase 2 focused on implementation of the collaborative care model. Process and outcome evaluation of predetermined measures assessed the projects impact and effectiveness.

## **Results**

Overall, the collaborative practice model had a positive impact on reducing avoidable ER visits and hospitalizations for ACS conditions. Both phase 1 and 2 had a favorable impact on reducing hospital transfers. However, a longer implementation period for phase 2 would have provided more outcome data. The perception of both staff and MDs did reveal a significant variable in the decision to transfer as did the

availability of in house diagnostic testing. The physical presence of a NP provided timely face-to-face visits for patients but also was important for support and mentoring of nursing facility staff.

## **Conclusion**

Collaboration was a significant factor in preventing hospital admissions. However, these relationships take time to develop and lack of knowledge of the LTC facility environment and regulations can impede full collaboration from facility staff. Education of both facility staff and MDs on the NPs' role within the interdisciplinary team is necessary for successful implementation of a collaborative care model. The LTC facility environment and services are also critical in enabling the facility to provide care of residents with ACS conditions. Nursing staff confidence in their professional ability to manage residents with ACS conditions in the facility has to be increased in order to reduce hospital admission rates. Nursing perception does clearly relate to transfer to both the ER and hospital. However, MDs' perceptions of nurses' ability to assess and manage ACS conditions was also a factor that needs to be addressed. The increased use of advance directives and open and regular discussions about code status, treatment and transfer can improve outcomes in relation to hospital admissions for ACS conditions.

The DNP project demonstrated that physical presence of a NP who provides primary care in the LTC facility on a regular scheduled basis does lead to the early identification of ACS conditions and their treatment of ACS in the facility.

## **Chapter 2: Problem**

The number of older adults in the United States (US) is rapidly increasing. The Centers of Disease Control and Prevention (CDC) predict that by 2030 about three million older adults will live in nursing homes representing approximately five percent of the older adult population (CDC, 2012). In 2009, 13.2% of the population over 85 lived in nursing homes (AOA, 2011). Furthermore, the oldest old (over 85 years) are expected to reach nineteen million by 2050 (US Census Bureau, 2012). Changes to the Medicaid case-mix payment system increased the average acuity of long stay nursing home residents and this trend is likely to continue (Feng, Grabowski, Intrator & Mor, 2006). The rapidly increasing number of older Americans has extensive implications for our healthcare system and places extraordinary demands on the provision of health care in nursing homes. NPs are in a position to play a key role in preventing avoidable hospitalizations by meeting the demand for higher acuity LTC nursing facility care.

There are a number of practice models used by NPs in LTC that demonstrate improvements in quality of care and cost effectiveness. McAiney, Haughton, Jennings, Farr, Hillier and Morden (2008) suggested that practice models designed to meet the distinctive needs of LTC and residents can enhance quality of care. The use of the Active Primary Care practice model by NPs was effective in managing the cost of care more effectively (Kane, Keckhafer, Flood, Bershadsky, & Siadaty , 2003). Rapp (2003) explored the role of APRNs in LTC and suggested that the NP-MD collaborative model has strengths. The LTC setting requires that NPs develop and implement collaborative practice models designed to meet unique needs of the populations served.

NPs are also in a position to make a substantial contribution to the future of nursing by improving the quality of health care in LTC through collaborative practice. In recent years the NP role has expanded in both numbers and competencies. The Consensus Model of APRN regulation (2008) has removed barriers to NP practice and NPs have a greater opportunity take a lead role in program development and implementation. With this expanded practice capability, the opportunity to transform the traditional relationships with MDs and other members of the interdisciplinary team, into collaborative relationships is possible.

Interdisciplinary collaboration has multiple definitions within the literature. The multiple definitions have contributed to the difficulty in comparing literature on this issue. Petri (2010) described interdisciplinary collaboration to encompass working together, focusing on solving problems and mutual goals. However, Bronstein (2004) defined interdisciplinary collaboration as maintaining relationships that focus on interdependence, collective goals, and flexibility. The working alliance was the basis for Kocha, Egbert, & Coeling (2005) definition of interdisciplinary collaboration within research teams. The working alliance is comprised of mutual goals, shared commitments and strong relational connections between team members. It is clear that before interdisciplinary collaboration can be successful there must be interdisciplinary role awareness, interpersonal relationship skills, deliberate goal setting, and ongoing support.

### **Statement of Problem**

Hospitalizations that result from a transfer of residents from LTC facilities have a negative effect health care costs and quality of life. The cost of hospitalizations is an

area of major concern for the American healthcare system. The Affordable Care Act has key provisions to improve the quality of care by reducing hospital readmissions (CMS, 2012). Avoidable hospital admissions can have a significant financial cost and impact on quality of life for nursing facility residents (Ouslander et al., 2010). The Institute for Health Improvement (2009) has gathered a number of promising interventions to reduce hospitalizations some of which focus on LTC. Cost savings are estimated to be \$103,000 per year per nurse practitioner in the Evercare LTC model (Kane et al., 2003). The significant cost savings underscore the need for NP driven EBP models in LTC.

Transfers to hospital for acute care are a common occurrence among LTC facility residents. ACS conditions are a major reason for hospitalization of LTC facility residents. The ACS conditions are defined as conditions for which hospitalization is preventable if appropriately managed on an ambulatory basis. The list of ACS diagnoses includes angina pectoris; asthma, cellulitis; chronic obstructive pulmonary disease(COPD), congestive heart failure(CHF), dehydration, diabetes mellitus, gastroenteritis, epilepsy, hypertension, hypoglycemia, urinary tract infections(UTI), pneumonia and ear, nose, and throat infections (Intrator, Zinn & Mor, 2004). The ACS diagnosis of pneumonia, UTI, CHF, dehydration, and COPD are the most common ACS diagnoses linked to avoidable hospitalizations from nursing homes (Grabowski, O'Malley & Barhydt, 2007; Graverholt et al., 2011). Hospital admissions for residents of LTC facilities generate significant costs to Medicare and Medicaid. Therefore, reducing avoidable hospitalizations for ACS conditions could save Medicare and Medicaid significant amounts of money (Grabowski et al., 2007).

The Center for Medicare and Medicaid Services (CMS) is supporting an initiative to reduce avoidable hospitalizations and improve care in nursing facilities through evidence-based interventions (CMS, 2012). Avoiding hospitalization for LTC facility residents has crucial cost benefits in today's financial health care climate. In addition, these efforts to reduce avoidable hospitalizations have resulted in higher acuity in LTC facilities which requires more acute medical treatment by NPs and MDs. CMS (2012) suggest that approximately 45% of hospital admissions from LTC facilities could have been avoided. The cost to Medicare of these 314,000 potentially avoidable hospitalizations is proposed to have been \$2.6 billion in 2005. Furthermore, CMS is planning to use pay for performance, bundled payments, and other approaches to provide financial reasons to reduce avoidable hospitalizations of patients from nursing homes (Lourde, 2011). Evidence-based interventions are needed that address the higher acuity of LTC residents and focus on reducing avoidable hospitalizations from LTC facilities.

### **Evidence Based Practice Conceptual Framework**

Rosswurm and Larrabee's (1999) EBP model guides healthcare providers through an organized process for evidence-based practice change utilizing change theory and quantitative and qualitative data along with clinical expertise. This EBP model appeared to be most applicable of this EBP project in the LTC setting on Kaua'i. This six step model guides clinicians through assessing the need for change in practice to the integration of an evidence-based protocol. Step one, the assessment phase of the review, examined the need for change in clinical practice. In step two, the problem of avoidable hospitalizations from LTC was linked with the interventions in the literature.

The third step, synthesizing best evidence, was conducted by examining the available research data and determining the quality of evidence by grading the evidence; identifying the rigor of the methodology strength and consistency of the studies; and identifying the benefit and achievability. At the fourth step, design a change in practice, the EBP project was designed and supported by the evidence gathered in step 3. The fifth step, implement the change, took place during summer 2014. The last step of Rosswurm and Larrabees' Model is evaluate the change in practice, and integrate and maintain the change. This step was completed during spring and summer 2016.

Several studies have used Rosswurm and Larrabees' EBP theory as a conceptual basis for the design of EBP projects. An acute stroke program established that improvements could be made for a disease-specific population through the use of the EBP, interdisciplinary teamwork, planning, and collaboration (Kavanagh, Connolly, & Cohen, 2006). The study used outcome measures based on existing clinical practice guidelines. Similarly a primary care based EBP intervention self-management intervention designed for patients with COPD used Rosswurm and Larrabees' EBP model (Facchiano, Hoffman Snyder, & Nunez, 2011). The settings for the design of these two EBP studies included an acute care setting and an office based primary care setting. However, it seems feasible that this EBP model could be effective as a conceptual basis for designing projects based in LTC as both settings have commonalities with LTC.

## **Review of Literature**

**Data Sources and Search Strategy.** The MEDLINE and the Cumulative Index to Nursing and Allied Health Literature (CINAHL) were used to search for English-



language articles and covered a 13-year period from 2002 to 2015. The electronic searches used subject headings of: nursing home residents, long-term care, collaboration, avoidable hospitalizations, preventable hospitalizations, ASC, nurse practitioners. Studies of designs using qualitative and quantitative data collection methods as well as quality improvement projects were considered. In CINAHL methodological filters of publication types for systematic reviews and research articles were used. In addition an electronic search using Google Scholar was conducted.

**Methodological Quality.** Methodological quality of the current evidence on the topic is variable. The difficulty and complexity involved with conducting randomized controlled studies in nursing homes is a significant factor that is acknowledged in the literature; therefore, QI projects and systematic reviews were included. Mosby's grading tool was used to determine the level of evidence of all articles.

## **Results**

Twenty-two articles were identified in the initial search. After initial review, 10 were excluded that were not relevant to the LTC setting. Of the remaining 12 articles, four were excluded after abstract review because they addressed conditions other than ACS conditions. Each of the remaining eight articles underwent full review. The Google Scholar yielded one systematic review. Therefore, there were a total of nine articles included in the review of the literature for this project. Three studies met the criteria for level IV(Kane et al., 2003; Ouslander, et al., 2011;Tena-Nelson, Santos, Weingast, Amrhein, Ouslander, & Boockvar, 2012), one study met level V criteria (Polniaszek & Walsh, 2011) and five met level VI criteria(Intrator, Zinn, & Mor, 2004; Ouslander et al.,

2010; Young, Barhydt, Broderick, Colello, & Hannan, 2010; Lamb, Tappen, Diaz, Herndon, & Ouslander, 2011; Walsh et al., 2012).

### **Synthesis of Literature**

A synthesis of the literature identified three main themes: factors that lead to avoidable hospitalizations; interventions to reduce acute care transfers; and interdisciplinary collaboration.

### **Factors that Lead to Avoidable Hospitalizations**

**ACS conditions.** Several studies have identified ACS conditions as a significant cause of avoidable hospitalizations from nursing homes (Ouslander et al., 2010; Walsh, Wiener, Haber, Bragg, Freiman, & Ouslander, 2012). However, these studies also implied that ACS conditions alone were not the only reasons for hospitalizations with other significant variables impacting the decision to hospitalize patients.

Ouslander et al., (2010) conducted a retrospective QI project that examined the potential for avoidable hospitalizations in residents in 20 nursing homes in Georgia. The admitting diagnoses were noted as being potentially avoidable and correlated with ACS conditions. The results of the project implied that DNR status, the presence of an NP or medical doctor (MD) in the facility and patients' race were significant variables that affected the outcome of potentially avoidable hospitalizations. The authors used an expert panel to identify factors that had the potential to prevent avoidable admissions. The ability to provide intravenous (IV) therapy, lab results within 3 hours, and NP or MD presence were all identified as significant factors in preventing avoidable hospitalizations related to ACS conditions. This QI project demonstrated the clear need

for EBP projects that design interventions that include educational components related to IV therapy, a NP-MD collaborative practice model and advance care planning.

A retrospective study of hospital admissions in 2005 found that five ACS conditions were responsible for the majority of hospital admissions of dually eligible beneficiaries (Walsh et al., 2012). Pneumonia was determined to be the number one reason for admission from nursing homes. The authors demonstrated that educational interventions aimed at early recognition of ACS conditions and the use of a collaborative practice model involving a NP in the primary care management of nursing homes residents have potential to reduce ACS related hospital admissions. This study clearly illustrated that it is essential that EBP projects that are addressing hospital admissions from LTC facilities focus on ACS conditions, particularly the five that result in the majority of avoidable hospitalizations from nursing homes.

***Facility staff perceptions.*** Two studies have examined the perception of facility staff on avoidable hospital admissions. Staff perceptions were found to be a significant determinant of hospitalizations of nursing home residents (Young, Barhydt, Broderick, Colello, & Hannan, 2010; Lamb, Tappen, Diaz, Herndon, & Ouslander, 2011). Missing early symptoms, family wishes and communication gaps were some of the reasons staff perceived a hospital transfer as unavoidable (Lamb et al., 2011). Directors of Nursing (DONs) were the participants in a study by Young et al., 2010 which also found that perceptions of DONs about the patients impacted avoidable hospitalizations.

Interestingly, DONs noted that physicians' lack of willingness to treat in the facility was a major reason for hospitalization of nursing home patients. This finding clearly demonstrated the need for any EBP project that is attempting to reduce avoidable

hospitalizations from LTC settings to include identifying and addressing existing staff perceptions about when and how to treat patients in LTC settings.

### **Interventions to Reduce Avoidable Hospitalizations**

**APRN active primary care management model.** Two studies suggested that the use of NPs for patient management in nursing homes reduces avoidable hospitalizations (Intrator et al., 2004; Kane et al., 2003). In addition, a number of other variables were identified as contributing reasons for avoidable hospitalizations. Kane et al. (2003) focused on the Evercare program and used an active primary care model to demonstrate reductions in potentially avoidable hospitalizations. Interestingly, only one third of NP time focused on direct patient management, which suggests that other NP roles and responsibilities may be contributing to reductions in avoidable hospital admissions. For example, approximately 30% of NP time was spent in communication with other healthcare providers and patients' families. The NPs in this model also provided both formal and informal education to nursing home staff. However, there was no separate analysis of these other factors and their impact on reducing avoidable hospital admissions; therefore, their statistical significance is unknown. The Evercare model also uses a financial incentive system for nursing homes to keep residents in the facility. Again, the impact of the incentives was not examined independently of the NP active primary care model. Consequently, EBP projects should include outcome measures that assess the impact of NP communication and education of other health care team members on reducing avoidable hospitalizations.

In another study, primary care management of residents in nursing homes by NPs and physician assistants reduced hospitalizations related to ACS conditions

(Intrator, Zinn, & Mor, 2004). This study took place in a number of states and had a large number of participating nursing homes. Multiple variables were identified including number of physicians per facility, DNR status, ability to provide IV fluid and type of staff. The results of this study found that all these variables had a significant impact on preventing avoidable hospitalizations. Therefore, the results of this study provides further support the need for an EBP project that separates and addresses these variables and measures their impact.

A systematic review supported by the US Department of Health and Human Services (USDHHS) recommended increasing the use of NPs in nursing homes for primary care management as a potential intervention to reduce avoidable hospitalizations (Polniaszek & Walsh, 2011). Furthermore, they clearly pointed out that this alone may not be sufficient. The authors refer to the Evercare model that also includes communication with nursing home staff and collaboration with MDs. Therefore, the NPs' multi-faceted role in LTC facilities clearly dictates a need for a multidisciplinary approach to reducing avoidable hospitalizations.

### **Interventions to Reduce Acute Care Transfers**

The Interventions to Reduce Acute Care Transfers (INTERACT) II has been used in a number of studies that focused on preventing avoidable hospitalizations from nursing homes (Ouslander, et al., 2011; Tena-Nelson, Santos, Weingast, Amrhein, Ouslander, & Boockvar, 2012). The INTERACT is a quality improvement intervention that includes a group of tools and strategies intended to assist nursing home staff in early identification, assessment, communication, and documentation about changes in resident status. However, the INTERACT studies have not been able to demonstrate

significant reproducible results. The INTERACT tool kit was used by Tena-Nelson et al., (2012) as an intervention to reduce avoidable hospitalizations in nursing homes in New York state. The study intervention consisted of an educational program and provision of INTERACT tools for staff use. Facilities voluntarily choose to use the tools in their facilities. Facilities that chose to implement the INTERACT tools had higher reductions in preventable hospitalizations than those that attended the educational program only. However, neither group had statistically significant reductions in avoidable hospitalizations. The authors suggested that this was due to relatively low rates of avoidable hospitalizations prior to the intervention and suggest INTERACT may have more utility in facilities with existing high rates of avoidable hospitalizations. Consequently, a comparison facility may demonstrate effectiveness of interventions in facilities with existing lower rates of avoidable hospitalizations.

Nursing homes in three states were the settings for a QI project to evaluate the effectiveness of INTERACT II in reducing avoidable admissions by Ouslander et al. (2011). During biweekly teleconference, a NP facilitated the implementation of the INTERACT II intervention in addition to in-services, and the provision of the INTERACT tools. The findings of this QI project found a 24% reduction in avoidable hospital admissions compared to 3% in a comparison group. Based on the findings, the authors suggested that cost savings are possible using INTERACT II to prevent avoidable hospitalizations. However, the authors also acknowledged the QI project has significant limitations. Of particular interest is the lack of involvement of MDs and NPs in the project although it is recognized that they play an important role in the decision to hospitalize. Most would agree that MDs and NPs have a central role in preventing

avoidable hospitalizations. Consequently, it is crucial that they are actively involved in any EBP intervention that aims to provide evidence for the reduction in avoidable hospitalizations from nursing homes.

### **Interprofessional Collaboration**

Collaboration between NPs and MDs is an important health care delivery approach that can improve health care outcomes. However, the tension between the theoretical definition of collaboration and its practical reality has negative consequences on health outcomes. The resulting strain on professional relationships can prevent a collaborative approach to care. Arling, Abrahamson, Miech, Inui, & Arling (2014) suggested that both formal and informal communication can improve health outcomes for nursing home residents when framed within a collaborative approach to QI. A key element of NPs' ability to practice to the full extent of their knowledge and skills is autonomy. Interprofessional collaboration is one of the essential elements of NP education and successful collaboration is critical to providing safe, comprehensive care. However, MDs often view a collaborative relationship with NPs as being one involving their supervision of NPs who are dependent on MDs to practice (Bridges, 2014; Maylone, Ranieri, Quinn Griffin, McNulty, & Fitzpatrick, 2011;). One study explored NP-MD perspectives of collaboration within a nursing home environment (O'Brien, Martin, Heyworth, & Meyer, 2009) with the findings indicating that although NPs and MDs define collaboration in similar terms, their working perceptions of collaborative practice differ. In addition, personal factors have both positive and negative consequences on a NP-MD collaborative practice model (Bridges, 2014). A number of precursors such as autonomy, role clarity and mutual respect are required for

successful collaboration. These influences must be addressed for successful collaborative practice to occur.

A Cochrane review by Zwarenstein, Goldman, & Reeves (2015) suggested that there is inadequate examination of interprofessional collaboration within current studies and recommended conceptualization and measurement of collaboration in future studies in order to improve professional practice and healthcare outcomes. Dogherty and Larson (2005) completed a review of scales that measured NP-MD collaboration and found that five instruments were recommended valid and reliable for use in future studies measuring nurse-physician collaboration. In a literature review by Tang, Chan, Zhou, & Liaw (2013) the importance and quality of nurse-physician collaboration emerged as a significant factor in the quality of patient care regardless of the scale used. However, most of the scales used measure RN-MD collaboration only and did not measure NP-MD collaboration.

The Provider Collaboration Survey (PCS) explores NP-MD collaboration and satisfaction with collaboration. This survey was developed and pilot tested by Way, Jones & Baskerville (2001) to measure collaboration and collaboration satisfaction between NPs and MDs in primary care in Canada, however, there was no discussion about the validity and reliability of the survey. Additionally, it was used to test NP-MD collaboration in LTC settings (Donald et al., 2009). Therefore, it appears an appropriate survey to utilize the PCS to measure MD-NP collaborations and satisfaction with collaborations in both primary care and LTC settings.

## **Summary**



Overall there are a very limited number of published studies that focused on EBP interventions to reduce avoidable hospitalizations from nursing homes. The strength of the evidence is variable and there is a lack of consistency across studies. For example, the studies using the INTERACT II tools had inconsistent results when these tools were used in nursing homes that had lower existing hospitalization rates. Moreover, multiple studies identify a number of factors that can influence avoidable hospitalizations including staff perceptions, NP-MD collaboration, the use of INTERACT II, and a NP primary care model. These factors deserve consideration when designing an EBP intervention to reduce avoidable hospitalizations from LTC facilities.

APRNs are in a position to make a substantial contribution to the future of nursing by improving the quality of health care in LTC through collaborative practice. Establishing relationships with health care stakeholders and health care colleagues is the basis for nursing practice. APRNs already have skills in this area and can use them to advance collaborative practice. Recently, the Institute of Medicine's (IOM) partnered with the Robert Wood Johnson Foundation (RWJ) to promote collaborative practice as noted in the Future of Nursing report statement "*APRN's are now in a strong position to impact the success of the IOM's vision of the future of nursing through collaborative practice*" (RWJ, 2011). Multiple studies provide evidence that collaboration among health care professionals can improve patient outcomes (Gilbert, Staley, Lydall-Smith, & Castle, 2008; Herrmann & Zabramski, 2005; Rapp, 2003; San Martin Rodriguez, D'Amour & Leduc, 2008). The evidence also suggests that APRNs in LTC facilities need to develop collaborative practice models assess NP-MD collaboration in a systematic way i.e. using existing measures of NP-MD collaboration. Collaborative practice models

support advancement of the nursing profession, and highlight APRNs' critical role in providing quality health care to residents of LTC facilities. The increased use of NPs in LTC facilities engaging in collaborative practice models is an important strategic approach to reduce avoidable hospitalizations (Kane, 2003; Polniaszek & Walsh, 2011).

### **Gaps in Evidence Based Practice**

The majority of studies investigating avoidable hospitalizations are concerned with identifying the factors associated with avoidable hospitalizations rather than with interventions to reduce them. Several interventions have demonstrated some success; however, findings from studies are inconsistent and vary depending on the health care settings. Research suggests that the use of NPs and tools like INTERACT II may reduce avoidable hospitalizations. However, although previous research has described staff perceptions of avoidable hospitalizations it has failed to address the casual relationship between perception and staff behavior in the nursing home on avoidable hospital admissions. In addition, current research into avoidable hospitalizations has been limited to the Eastern parts of the US and therefore, it is uncertain if the results are generalizable to other parts of the US. Moreover, the literature does not address the nursing home practice environment which includes the multidisciplinary approach to care. Consequently, there is a lack of evidence that links other multidisciplinary team members in LTC facilities to avoidable hospitalizations.

Collaborative practice is a strategic focus of the health care community and it is receiving worldwide support from several major organizations. However, there is a lack of existing evidence that demonstrates that collaborative practice in nursing homes significantly reduces avoidable hospitalizations. Recently, health care professionals'

education has included the development of curricula based on the competencies for interprofessional education in order to support concepts and experiences in collaborative practice that will foster this approach to health care when the students graduate (IPEC, 2011). The nursing home environment is viewed as an ideal site for students to develop competencies related to interdisciplinary collaboration (Mezey, Mitty, & Burger, 2009). In addition, policy initiatives by the IOM are promoting the collaborative practice model in the Future of Nursing report (RWJ, 2011). Collaborative practice is also receiving international support from the World Health Organization (WHO). The WHO is supporting initiatives that focus on collaborative practice using shared governance and team based protocols (Mickan, Hoffman, & Nasmith, 2010; WHO, 2010). These worldwide initiatives to facilitate greater collaboration between all healthcare professionals highlight the current necessity for collaborative practice models to be developed to meet the need of underserved, vulnerable populations such as the elderly in LTC facilities.

### **Preliminary Recommendations**

Evidence suggests that APRN's are in a key position to develop collaborative practice models in LTC facilities to reduce avoidable hospitalizations. Research suggests the presence of a geriatric NP (GNP) in the LTC facility setting at least one day a week is effective in reducing avoidable hospitalizations (Kane et al., 2003; Intrator et al., 2004; Intrator, Zinn, & Mor, 2004; Polniaszek & Walsh, 2011). These visits enable the GNP to actively engage primary care management related to both acute and chronic conditions for LTC facility residents. In addition, it is essential that staff in-services address the four ACS conditions of pneumonia, urinary tract infections, congestive heart

failure, dehydration and the need for advanced care planning. These in-services can be provided by GNP for all registered nurses and licensed practical nurses (LPNs) as part of the implementation of the EBP project. Another vital component is educational in-services for all staff related to acute care management skills and communication skills.

Development of a survey instrument to assess staff perceptions related to the problem of avoidable hospitalizations is needed before an effective plan to address the problem can be developed. It is also imperative that consideration about the facility practice environment be a part of this assessment. A team approach to care includes clear and effective routes of communication with the attending physicians by all team members. The measurement of collaboration efforts and satisfaction with collaboration by the team members can serve to modify and improve existing practices. Conceptual support for a collaborative practice NP model is indispensable and, in this regard, Gittels' Relational Coordination Theory which has three main underpinnings: shared goals, shared knowledge, and mutual respect for work (Gittel, Weinberg, Pfefferle, & Bishop, 2008) is an appropriate model to effectively support the professional collaborative relationship between the NP, MD and other multidisciplinary team members.

### **Chapter 3: Methods**

LTC is a unique care environment requiring staff have specialized skill sets and that there is care from multiple disciplines. The LTC setting can generate a significant number of costly acute care episodes that require the expertise of a medical specialist who also a specialist understands the LTC environment. It is apparent that the APRNs role in LTC is extremely complex. NPs not only provide primary care but also manage chronic conditions, palliative care, and family counseling. In addition, they are often responsible for managing high acuity residents who have acute conditions and, if not treated in a timely manner, may require hospitalizations. Furthermore, the highly regulated nature of the LTC environment requires an effective collaborative multidisciplinary approach to care.

This chapter will describe the methods and process for implementation of the EBP QI project. This includes presentation about the setting, sample, data collection plan and tools. The project procedure includes the evaluation plan and program outcome measures.

#### **Purpose Statement**

The purpose of this EBP project was to develop, implement, and test the efficacy of a collaborative practice model to reduce hospital admission of residents from a LTC facility.

#### **Clinical Question**

For residents of a long term care facility, how does a collaborative practice model compare to the current standard of care to reduce hospital admissions?

#### **Design**

The fourth step of Rosswurm and Larrabee's (1999) Model, which is to design a change in practice, relates to this project. The fifth step of this model includes the implementation and evaluation of the change in practice. Finally, the sixth step of the model focuses on the integration and sustainability of the change, which are discussed in subsequent chapters.

### **Conceptual Framework**

Conceptual frameworks that support the effectiveness of collaborative practice in LTC are lacking; however, clear theoretical/conceptual frameworks do support collaboration as an effective approach to treatment interventions (Reeves et al., 2011; Schmitt, 2001). Interactional, organizational and systemic factors form the framework for successful collaboration (D'Amour, Ferrada-Videla, San Martin Rodriguez, & Beulieu, 2005; San Martin Rodriguez, Beulieu, D'Amour & Ferrada-Videla, 2005). Gittels' (2000) relational coordination theory (RCT) provides a foundation for the conceptualization of this project. This theory has three main underpinnings: shared goals, shared knowledge, and mutual respect for work. Shared goals motivate team members to act with greater concern for the overall patient care process and outcomes; shared knowledge informs team members about how their tasks and those of others contribute to the overall patient care process and outcomes (Gittel, Weinberg, Pfefferle & Bishop, 2008). All multidisciplinary team members must have mutual respect for each other's work in order to further reinforce the inclination to act in line with the goals of the overall patient care process to achieve the healthcare outcome goals.

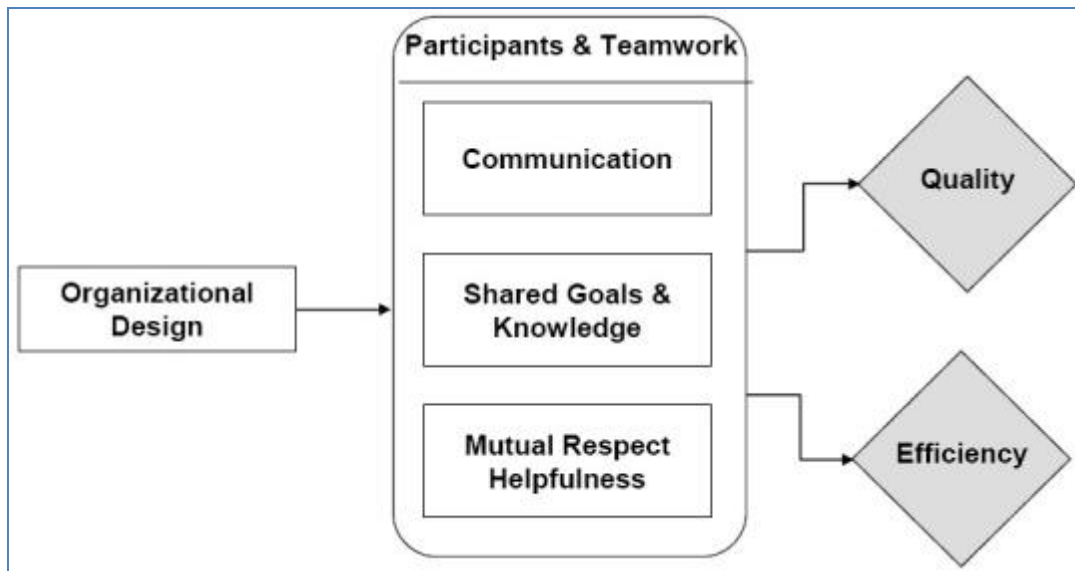


Figure 3.1 *Gittels' Relational Coordination Framework*

(Gittel et al., 2008).

Several studies use Gittels' theory as a conceptual basis for investigations into the relational aspects of improved outcomes. Havens, Vasey, Gittel, and Lin (2010) used RCT as a conceptual basis for a study that demonstrated improvement in quality of care through enhanced relational coordination between nurses and other providers. They suggested that RCT is applicable to nursing home settings, using it as evidence for improved outcomes in LTC. However, the outcomes that they measured were related to nursing tasks rather than APRN or physician medical management. In addition, RCT has been associated with improved outcome performance in relation to a healthcare supply chain. This was independent of external financial motivations (Shah, Goldstein, Unger & Henry, 2008). This finding has implications for the LTC environment because part of the chain of care in LTC facilities includes multiple independent health care providers and organizations. In a study by Bae, Mark and Fried (2010) RCT improved group cohesion and coordination and impacted patient satisfaction. In a

second study, relational coordination was associated with higher quality care and improved healthcare system outcomes including length of stay (Gittell, Seidner, & Wimbush, 2008). Therefore, RCT can enhance group cohesion within the LTC environment and provide conceptual support for the development and implementation of a collaborative practice model that has the potential to improve healthcare outcomes.

### **Operational Definitions**

An avoidable hospital admission is defined as a hospitalization for Ambulatory Care Sensitive (ACS) conditions that are preventable if appropriately managed on an ambulatory basis. An ambulatory setting is defined as an outpatient setting. Hospital admission is defined as an admission to an acute hospital bed with an ACS admitting diagnosis. An emergency room (ER) visit is defined as a transfer out of the nursing facility for an acute evaluation and treatment of an ACS condition or signs and symptoms of an ACS condition. If an ER visit leads to an admission, it will be counted as both an ER visit and hospital admission. A long-term care facility is defined as one which has both skilled nursing facility and intermediate care facility beds. A LTC resident is a person who resides in a LTC facility.

### **Setting**

Hale Kapuna Heritage Home (HKHH) is an 89-bed nursing home located in Lawai on the island of Kauaʻi, Hawaiʻi. The HKHH is one of two facilities on Kauaʻi owned by Ohana Pacific Management Group and has both skilled nursing facility (SNF) and intermediate nursing facility (ICF) beds. The HKHH has three separate nursing facility units in three ground level buildings. The facility provides SNF care for short-term rehabilitation through a multidisciplinary approach from a team of physical therapists,



occupational therapists, dietitians, speech therapists, social workers, registered nurses (RNs) and certified nurse aides. Clinical Laboratories provide laboratory services three times a week for the HKHH residents. Kaua`i Medical Clinic provides other outpatient services and Wilcox Memorial Hospital provides ancillary services. Wilcox Memorial Hospital also provides emergency care and hospital admissions for acute conditions.

Primary care physicians from Kaua`i Medical Clinic (KMC) and private physicians who practice on Kaua`i provide medical care at HKHH. Both KMC and Wilcox Memorial Hospital are affiliated with Hawai`i Pacific Health (HPH). Dr. Eric Yee is the medical director for the HKHH. Dr. Yee is a board certified family practice physician and geriatrician affiliated with Straub Clinic on Oahu, which is also affiliated with HPH. During the implementation of the project, KMC employed a part-time gerontology NP (GNP) who worked in collaborative practice with Dr. Yee.

## **Sample**

**Population and Eligibility Criteria.** The projects target population consisted of HKHH residents aged 65 years and older with a participating KMC attending physician. In total, five attending physicians participated in the project. Residents with a physician who was not a KMC member were excluded.

## **Sample Size**

The sample consisted of the entire population of residents who met the inclusion criteria during the project implementation period. As the sample size was less than 30 residents utilizing the entire population will help ensure an accurate level of precision and limit sampling error.

## **Data Collection Plan**

**Data Collection.** A survey was used to evaluate LTC facility staffs' perceptions of ER visits and hospitalizations of nursing facility residents ([Appendix A](#)). The information was used to ensure that the staffs' needs are met during subsequent the in-services about the four ACS conditions and collaboration. Baseline data was extracted from the residents' charts using a data collection tool, and again at 30 days post intervention to assess any change in program measures. A second survey collected qualitative and quantitative data to evaluate KMC provider collaboration ([Appendix B](#)) and facility staff satisfaction with the implementation of the project ([Appendix C](#)). Survey data were then transcribed into an MS Excel spreadsheet for analysis.

### **Data Analysis**

Descriptive statistics were calculated from quantitative data collected via staffs', facility administrators' and MDs survey responses. Frequencies and percentages were used for nominal and ordinal data. Outcome measures related to hospitalizations and ER visits were compared to benchmarks. Tables and graphs in the following sections illustrate the results of the data analysis.

### **Procedure and Program Intervention Plan**

The project was a quality improvement project consisting of two phases. Phase 1 consisted of the implementation of the LTC facility education component. The DNP candidate developed and taught the facility curriculum. Phase 2 focused on the implementation of the collaborative care practice model.

**Phase 1: Facility Staff In-Services.** The in-services covered the ACS conditions and their management, advanced care planning, communication and documentation. The most common ACS diagnoses are pneumonia, urinary tract infections, congestive

heart failure, dehydration, and COPD (Grabowski, O'Malley and Barhydt, 2007; Graverholt et al., 2011). However, as COPD is not an ACS diagnosis relevant to this LTC facility it was excluded. Therefore the in-services addressed each of the remaining four ACS diagnoses.

The in-service implementation spanned a three-week period and took place on different days each week to promote staff attendance. There were three modules that also included interdisciplinary communication, documentation, and advanced care planning. A PowerPoint format handout provided staff with an outline and a place to write notes about the topics that were covered ([Appendix D](#)).

Table 3.1 *In-service Topics*

Module	Topic
Module 1	Urinary tract infections (UTI)
Module 2	Dehydration & Pneumonia
Module 3	Congestive heart failure(CHF)

Each module had student learning outcomes related to the topic ([Appendix E](#)). A written pre- and post-test ([Appendix F](#)) evaluated student learning in addition to an assessment of learning through the group application activities. Gittels' RCT (2008) three main tenants of mutual respect, shared knowledge and shared goals structured the in-service approach to the interdisciplinary management of the ACS conditions.

**Phase 2: Collaborative Care Practice Model.** The collaborative care practice model provided an approach to the provision of care that is based on interdisciplinary healthcare team members working in collaboration. The MD, NP and registered nurse (RN) were the primary members. Although the collaborative care practice model involves multiple disciplines, the NP was involved in all three of the following key areas:

1. Early detection of ACS conditions
2. Early and active management of ACS conditions
3. Follow up for residents with identified ACS conditions

The NP was on site in the facility two days a week for approximately 12-16 hours total time. This enabled RNs to verbally report signs and symptoms of ACS conditions promptly to the NP. In addition, the presence of the NP in the facility on a regular basis enabled Gitels' RCT (2008) to be used to promote communication, collaboration and ongoing development of staff knowledge. The NP completed an episodic visit for all identified residents with acute illnesses. This visit included a history of present illness, medication review, food, fluids and weight review, focused exam and development of a treatment plan. For those residents who had an ACS treatment plan initiated by the MD over the phone, the NP completed a chart review, discussed the resident with the facility RN and, if medically necessary, completed a visit within 24 hours to assess the progress of the resident. The NP identified residents with a history of ACS conditions or previous hospitalization for ACS conditions through a chart review at the initiation of the project. Ongoing communication with the facility RN enabled close monitoring of these residents. The NP and MD communication utilized email, telephone and electronic devices including documentation in the EPIC electronic medical record. In addition, the NP completed required visits on participating residents as often as needed. This enabled the NP to develop knowledge of the resident and his/her medical problems in addition to closely monitoring and proactively managing ACS conditions.

### **Program Evaluation Plan**

The program evaluation plan included both process and outcome measures related to the two program objectives. Table 3.2 illustrates the measures.

## Program Measures

Table 3.2 *Program Measures*

Program Objective	Process Measure(s)	Outcome Measure(s)
<b>1. Reduce the number of avoidable hospital admissions related to ACS conditions among nursing facility residents on Kaua'i.</b>	1a. Implement a collaborative practice model for the medical management of nursing facility residents with a history of an ACS condition by 2015.	1a. Avoidable hospital admissions from the nursing facility will be less than 10%. 1b. Emergency room visits (ER) for ACS conditions will be less by than 10%. 1c. Providers will report satisfaction rate of 90% with the program.
<b>2. Identify, report and treat early signs and symptoms of ACS conditions in residents of the HKHH facility.</b>	2a. Facility RN's will attend program in-services. 2b. Facility RN's will have an increase in knowledge of ACS conditions.	2a. Residents with ACS conditions will have signs and symptoms reported within 24 hours. 2b. Residents with reported signs and symptoms of ACS condition will have treatment started within 24 hours. 2c. Facility staff will report a satisfaction rate of 90% with the program.

## Program Goals

The overall program goal was to reduce preventable hospital readmissions by providing LTC facility residents with a collaborative practice model of care based on current evidence. Both process and outcome evaluation will guide future program improvement, and support program sustainability.

## Stakeholder Descriptions

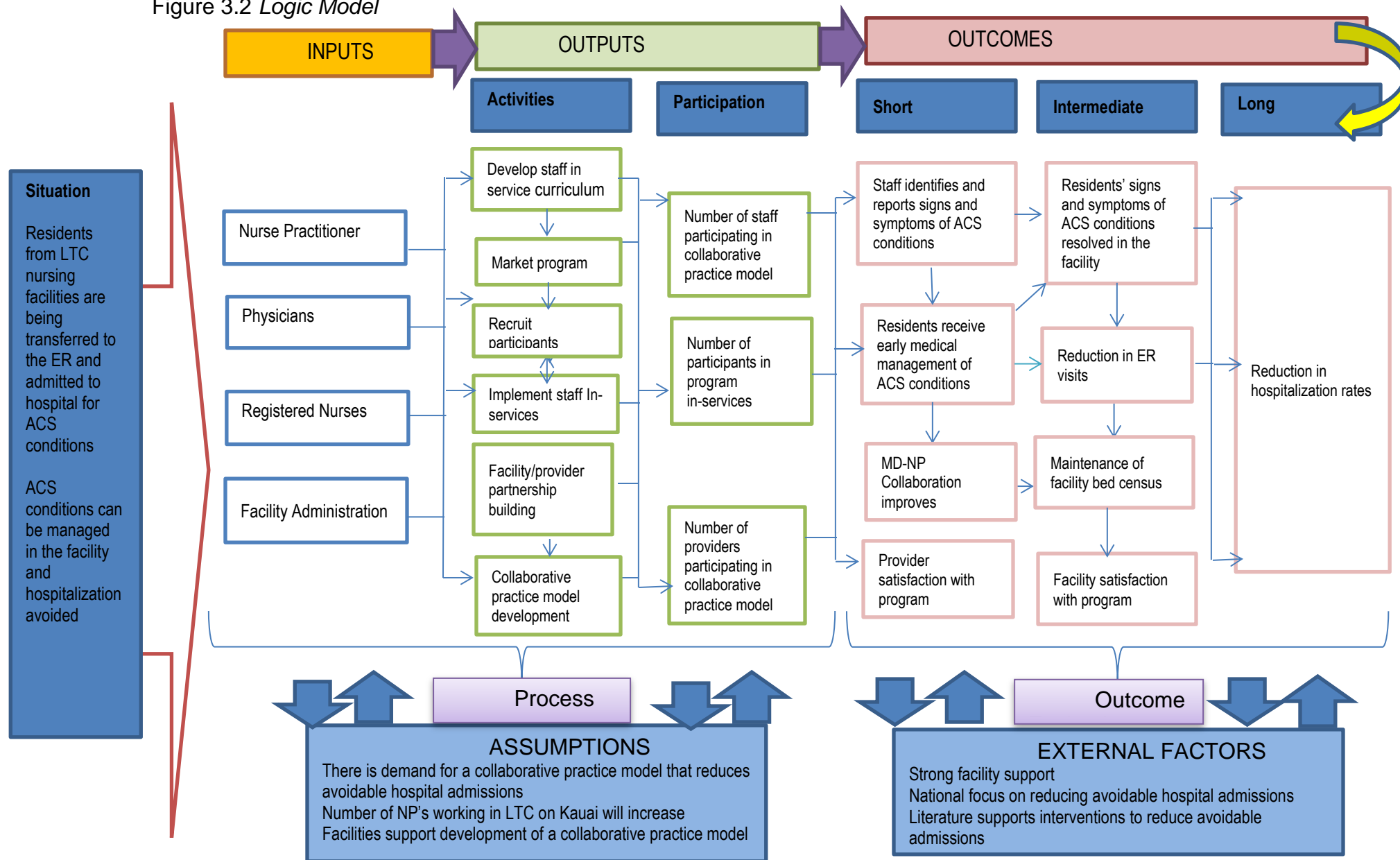
The HKHH administrator was supportive of the project as the facility received benefits from residents remaining in the facility for care and improvement in the quality

of care. In addition, the DONs' support was vital to facilitate the staff in-services and sustainability of staff knowledge.

The NP who participated in the project was employed per diem by KMC and paid an hourly rate. The KMC processed the bills for the resident visits and obtained the income generated by the NP visits.

The KMC MDs consisted of approximately six family practice and internal medicine physicians. The KMC attending MDs primary practice site is the KMC ambulatory care clinic. In addition to preventing hospitalizations, improved care coordination, less time spent on episodic visits and care management over the phone was viewed as beneficial to KMC MDs.

Figure 3.2 Logic Model



## Evaluation Methodology

Evaluation includes both direct and indirect methods utilizing quantitative and qualitative data. Table 3.3 illustrates the evaluation focus areas and methods.

Table 3.3 *Evaluation Methods*

Evaluation Focus Areas	Key Indicators	Data Collection Methods	Sources
<b>Program Development</b>	<ul style="list-style-type: none"> <li>➤ Curriculum</li> <li>➤ Staff time</li> </ul>	<ul style="list-style-type: none"> <li>➤ Document review: syllabi</li> <li>➤ Perception survey</li> <li>➤ In-service evaluations</li> </ul>	<ul style="list-style-type: none"> <li>➤ Facility staff</li> <li>➤ Facility administration</li> </ul>
<b>Reduction in ER visits and hospital admissions</b>	<ul style="list-style-type: none"> <li>➤ Admission rate</li> <li>➤ ER visit rate</li> </ul>	<ul style="list-style-type: none"> <li>➤ Chart review: ER note, admission H&amp;P</li> <li>➤ Facility administrative records</li> </ul>	<ul style="list-style-type: none"> <li>➤ Resident charts</li> </ul>
<b>Program Participation</b>	<ul style="list-style-type: none"> <li>➤ Number of residents</li> <li>➤ Number of MDs</li> <li>➤ Number of staff attending in-services</li> </ul>	<ul style="list-style-type: none"> <li>➤ Chart review</li> <li>➤ Institutional reports</li> <li>➤ Document Review: In-service records</li> </ul>	<ul style="list-style-type: none"> <li>➤ In-service records</li> <li>➤ Resident charts</li> </ul>
<b>Early detection and treatment of ACS conditions</b>	<ul style="list-style-type: none"> <li>➤ Rate of Identification of ACS s/s</li> <li>➤ Rate of identification of ACS s/s within 24 hours</li> <li>➤ Rate of start of treatment within 24 hours of s/s report</li> <li>➤ Rate of s/s resolved within facility</li> </ul>	<ul style="list-style-type: none"> <li>➤ Chart review: MD/NP progress notes, nurses notes</li> </ul>	<ul style="list-style-type: none"> <li>➤ Resident charts</li> </ul>
<b>Program Satisfaction</b>	<ul style="list-style-type: none"> <li>➤ Facility staff satisfaction</li> <li>➤ MDs satisfaction</li> <li>➤ Administration satisfaction</li> </ul>	<ul style="list-style-type: none"> <li>➤ Satisfaction survey: MD, RN, Administration</li> </ul>	<ul style="list-style-type: none"> <li>➤ Facility staff</li> <li>➤ MDs</li> <li>➤ Facility administration</li> </ul>
<b>NP-MD Collaboration</b>	<ul style="list-style-type: none"> <li>➤ MD collaboration</li> <li>➤ NP collaboration</li> </ul>	<ul style="list-style-type: none"> <li>➤ Provider collaboration survey: MD, NP</li> </ul>	<ul style="list-style-type: none"> <li>➤ MDs</li> <li>➤ NP</li> </ul>



## **Human Subjects Considerations**

The project was an evidence-based QI project and is, therefore, exempt from institutional review board approval. Chart review was consistent with usual practices at the LTC facility. The HKHH administration reviewed and approved the project proposal. There were no patient identifiers used when information about baseline and subsequent data were collected and analyzed. Ethical considerations included the protection of patient information according to the agencies' policies under the Health Insurance Portability and Accountability Act (HIPPA) promulgated by the USDHHS (USDHHS, n.d.). In addition, staff identifiers were not used when data were collected from the LTC facility staff's participation in the in-service pre- and post-tests.

## **Project Limitations and Strengths**

This project had a number of limitations. It was limited by its small sample size. Differing interdisciplinary definitions of collaboration may have impacted responses of staff about the collaborative team practice. In addition, the project implementation in one nursing facility on Kaua'i does not allow generalizability to any other LTC facilities.

Since this was a QI project, the effects of the small sample size on statistical significance are not relevant. Having a single project site to implement the project made staff participation and data collection simpler. Another strong component of this project was that it was based on current published evidence. Finally, the provision of a conceptual model that supported both the design and implementation of the project strengthened the project.

## **Summary**

This evidence-based QI project involved the implementation and evaluation of a collaborative care practice model in a LTC facility on Kaua`i with the primary objective of reducing LTC residents' avoidable hospital admissions. Collaboration within the interdisciplinary healthcare team focused on the physician, NP and RN. Phase 1 of the project began with facility staff in-services on four of the five main ACS conditions. Phase 2 focused on implementation of the collaborative care model. Process and outcome evaluation of predetermined measures assessed the projects impact and effectiveness.

## **Chapter 4: Results**

### **Objectives**

The overall program goal was to reduce avoidable hospital readmissions by providing LTC facility residents services that utilize a collaborative practice model of care based on current evidence. The DNP project had two main objectives:

1. Reduce the number of avoidable hospital admissions related to ACS conditions among nursing facility residents at the HKHH on Kaua`i.
2. Identify report and treat early signs and symptoms of ACS conditions in residents of the HKHH facility.

### **Description of Sample**

The project implementation took place in one LTC nursing facility on the island of Kaua`i from 5/28/2015 to 8/13/2015. Five of six KMC medical doctors (MD) participated in the collaborative care model and their combined resident panels totaled 27-29 residents, comprising approximately 34% of the facility census. A total of 15 facility staff participated in the projects in-services. Facility staff participation in the collaborative care model included the six RNs scheduled on a 12-hour day shift, two resident managers and a DON.

### **Perception Survey**

Facility staff completed a paper version of the perception survey before the start of an in-service which focused on ACS conditions, satisfaction with treatment and transfer and collaboration. Table 4.1 illustrates the information about the number of staff completing the survey.

Table 4.1 *Perception Survey Completion*

<b>Discipline</b>	<b>Number of surveys completed</b>	<b>Completion rate by discipline</b>
<b>RN</b>	11	85%
<b>LPN</b>	2	100%
<b>Facility administrator</b>	1	100%
<b>Facility DON</b>	1	100%
<b>Attending MD's</b>	1	16%

The results of the survey addressing perceptions revealed that overall 90% the facility staffs were satisfied that transfers and admissions to hospital from the HKHH were unavoidable. The main reasons that were identified by the staff for transfer of HKHH residents to the hospital were that the MD ordered the transfer, the HKHH resident and/or the family insisted, and high acuity condition of the resident. Staff from all disciplines who participated in the project identified these reasons. However, perceptions about the reasons for the transfer of residents to the hospital did differ by discipline for some of the questions. Overall, the RNs and the MDs felt that RN-MD communication was effective. The RNs and LPNs responding to the survey questions felt that the lack of a Provider Orders for Life Saving Treatment (POLST) did impact the decision to transfer; however, MDs did not think this was a significant factor. The MDs felt that difficulty in obtaining an accurate assessment of a resident's condition often prompted a transfer. The high acuity of the resident was consistently seen as a reason that transfer was unavoidable. Perception survey questions can be found in appendix A and relate to the reasons for transfer in table 4.2. Table 4.2 summarizes the perception survey results.

Table 4.2 *Summary of Perception Survey Responses*

Reasons for transfer	RN	LPN	Administrator	DON	MD
<b>MD orders</b>	100%	100%	100%	100%	100%
<b>resident/family insists</b>	81%	100%	100%	100%	100%
<b>no advance directives or POLST</b>	54%	50%	0%	0%	0%
<b>high acuity</b>	100%	100%	100%	100%	100%
<b>facility not equipped</b>	100%	100%	100%	0%	0%
<b>inadequate number of facility staff</b>	54%	100%	0%	0%	100%
<b>nursing staff skill level inadequate</b>	45%	50%	0%	100%	0%
<b>nursing missed s/s</b>	45%	0%	100%	100%	100%
<b>MD did not begin treatment early</b>	27%	0%	0%	100%	100%
<b>MD did not complete f/u visit for acute s/s</b>	45%	50%	100%	100%	100%
<b>MD/RN communication poor</b>	27%	0%	100%	100%	0%

### **Trend Analysis for Process and Outcome Measures**

Data for both process and outcome measures provided a complete analysis of the projects outcomes.

#### **Process Measures**

The projects two process measures were: 1) Facility RNs will attend program in-services; and 2) Facility RNs will have an increase in knowledge of ACS conditions.

#### **Facility Staff In-services**

**Participation.** The HKHH facility employs 36 licensed staff; 30 RNs and six LPNs. Staff attendance at the project's in-services required leaving the floor for a total

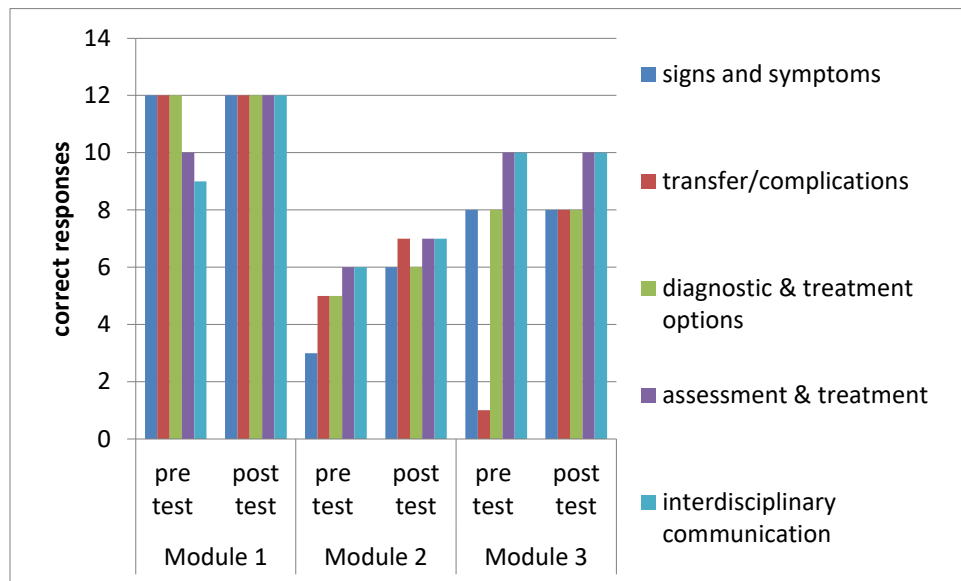
of three hours per staff member. Due to the nature of the LTC facility work environment, it was difficult for all of the licensed staff to leave the floor on some days when the in-service sessions were held. Table 4.3 illustrates staff attendance at the in-services.

Table 4.3 *In-Service Staff Attendance*

	<b>RN</b>	<b>LPN</b>	<b>Total licensed staff</b>
<b>Module 1</b>	13	2	15
<b>Module 2</b>	8	1	9
<b>Module 3</b>	9	1	10
<b>Mdule1,2,3</b>	4	1	5

**Pre- and post-tests.** The pre-test is a formative evaluation of current knowledge and serves as a basis for comparison for the post-test results. The pre- and post-test survey questions were aligned with the student learning outcomes for the modules. Both tests used a variety of questions including multiple choice, and short answer options. The staff completed both the pre- and post-tests under similar conditions. The staff completed pre-tests at the beginning of the in-service and post-tests at the end of the in-service. As figure 4.1 demonstrates the staff's knowledge increased in all areas. However, by module 3 the only area where staff knowledge increased was transfer/complications, which suggests application of knowledge gained in previous modules.

Figure 4.1 *Results of Pre- and Post-test*



**Program Implementation and Participation.** The program was implemented during the summer of 2015 and high participation by staff met the expected outcomes for the project. All RNs who were scheduled to work during the projects implementation period participated both phase 1 and 2 of the project, in addition to five physicians.

## Outcome Measures

**Early Detection and Treatment of ACS Conditions.** During the project implementation period 13% (4/29) LTC residents presented with ACS conditions. All of the HKHH residents who had signs and symptoms of ACS conditions had these reported to the NP or MD within 24 hours of onset. Among those residents with ACS conditions the most common diagnosis (75%; 3/4) was a UTI. In addition, treatment was initiated in the facility within 24 hours for three of the four (75%) residents with an ACS

condition. Only one resident of those with an ACS condition did not have treatment initiated prior to an ER visit and subsequent hospitalization.

#### **Reduction in Emergency Room Visits and Avoidable Hospital Admissions.**

ER visits were initiated for 17% (5/29) of the residents; however, three of the five (60%) were for non ACS conditions. Table 4.4 summarizes the reasons for transfer of residents to the ER and subsequent hospitalization.

Table 4.4 *Summary of Reasons for ER Visits and Hospitalizations*

<b>ER diagnosis</b>	<b>Admitting diagnosis</b>	<b>Discharge disposition</b>
<b>Sepsis r/t foot wound</b>	Sepsis r/t foot wound	Died
<b>LOC changes</b>	LOC changes Sepsis cause unknown	Died
<b>UTI</b>	UTI	Returned to facility
<b>Sepsis r/t UTI</b>	Sepsis r/t UTI	Died
<b>Fx femur</b>	Fx femur	Returned to facility

One of the residents who was transferred to the ER and was admitted to the hospital for the ACS condition of UTI had treatment for this condition initiated in the facility without improvement. The other resident who was transferred and admitted had developed signs and symptoms of sepsis prior to transfer, but there were no signs and symptoms that might have indicated an ACS condition was developing prior to the sepsis signs and symptoms. Although the overall numbers are small, ER visits and hospital admissions were prevented for 50% of the residents who developed an ACS condition after implementation of the projects' in-services.

#### **Program Satisfaction**



The HKHH facility staff completed a paper version of a satisfaction survey at the completion of the project. As noted in table 4.5, there was a high percentage of staff completing the survey.

Table 4.5 *Facility Staff Satisfaction Survey Completion Results*

<b>Discipline</b>	<b>Number of surveys completed</b>	<b>Completion rate by discipline</b>
<b>RN</b>	6	83%
<b>Resident managers</b>	2	100%
<b>Facility DON</b>	1	100%

The satisfaction survey results are presented in table 4.6 and reveal that 100% of the facility staffs were satisfied with the collaborative care practice model. Overall, the RNs were satisfied with the communication and collaboration with the NP using this model. In addition, the RNs indicated that they felt more confident in identifying ACS conditions.

Table 4.6 *Summary of Satisfaction Survey Responses*

	<b>Please indicate your level of agreement with the following statements</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
<b>Identification of ACS</b>	I acquired knowledge to identify early signs and symptoms of ACS conditions	7	2		
	I am better prepared to use my critical thinking skills when assessing residents with ACS conditions.	7	2		
	I can identify early signs and symptoms of ACS condition	9			
<b>Collaboration</b>	I understand the APRN collaborative practice model	7	2		
	The APRN collaborated effectively with the licensed staff.	7	2		
	I collaborated effectively with the APRN.	9			
	The APRN/RN collaboration improved resident care and outcomes	7	2		
	The APRN and I had mutual respect for each other.	9			
	The APRN and I shared our knowledge when managing residents.	9			
	The APRN and I shared goals related to residents care and management.	7	2		
<b>Communication</b>	I am better prepared to communicate effectively with MD's/ APRNs about residents with ACS conditions.	9			
	I feel more confident when communicating with MD's/APRNs about residents with ACS conditions.	9			
	The APRN in the facility 2 days a week improved communication within the multidisciplinary team.	7	2		
<b>Frequency of APRN visits</b>	The APRN in the facility 2 days a week was appropriate for effective resident medical management.	5	4		
	I did not fax the participating MD's on those 2 days.	7	2		
	I did not call the participating MD's on those 2 days.	7	2		
	The APRN in the facility 2 days a week provided the RN's/LPN's with adequate medical provider support	5	4		

## **NP-MD Collaboration**

The primary mode of ongoing communication and collaboration was through inputting visit notes into the EPIC electronic medical record (EMR) system. Twenty five (86%) of the HKHH residents received at least one visit from the NP. Eleven of the residents (38%) received two visits, while eight (28%) received one visit, and six (20%) received three visits by the NP. Notes about the visits were entered into the EPIC EMR directly after the visit and then sent to the MD to view and cosign. All further collaboration took place over the telephone or via email as needed.

The collaboration survey was completed by four (80%) of the participating physicians at the completion of the project. Results revealed that, overall; the physicians were satisfied with the collaboration with the NP. However, the frequency and amount of collaboration varied and was dependent upon the acuity of the HKHH residents. This may have impacted MD perceptions about the collaboration with the NP because the higher acuity residents would require more NP-MD collaboration to plan care. One physician had had prior experience working with NPs and this may have resulted in a higher comfort level on the part of the physician regarding the NPs' autonomy and satisfaction with the collaborative care practice model.

## **Summary of Results**

Overall, the collaborative practice model had a positive impact on reducing avoidable ER visits and hospitalizations for ACS conditions. However, a longer implementation period for phase 2 would have provided more outcome data. The perception of both the HKHH staff and MDs did reveal variations in the decision to transfer HKHH residents to the ER, as did the availability of in house diagnostic testing.

Additional face-to-face visits were provided by the NP for HKHH residents, in addition to support and mentoring of nursing facility staff which was a significant part of the collaborative care practice model.

## **Chapter 5: Discussion**

This chapter presents the interpretation of the project findings, the project limitations, and the project dissemination plans. In addition, it will discuss the relationship between the American Association of Colleges of Nursing (AACN) Doctoral Essentials and the activities that the DNP completed (e.g., courses, DNP project) to implement and evaluate this QI project.

The purpose of this EBP project was to develop, implement, and test the efficacy of a collaborative care practice model to reduce hospital admission of residents from a LTC facility.

### **Evolution of Project**

The project evolved over 3 years. It originally began in the summer of 2014 with the project implementation initiated in the summer of 2015. A group practice of four physicians willing to participate in the project necessitated a change in the project site from the originally planned setting (Garden Isle Healthcare Facility) to a LTC facility in which they all had patients.

### **Facilitators**

Numerous people assisted in the implementation of this project and the existing professional relationships with them eased implementation of the project. Although some of these relationships were established as a result of the DNP student's faculty role, it provided a solid basis for collaboration. The strong collaborative relationship that developed over the course of the project with the facility staff further facilitated the project. Kaua'i Medical Clinic and Wilcox Hospital administration further aided the

project by providing administrative support and assistance with technical issues related to the EMR and billing.

The involvement of an experienced GNP resulted in minimal time to become familiar with the elements and outcomes of the project, as well as facilitating the establishment of trust with the facility staff. The GNP knowledge of the regulations governing the LTC nursing facility environment and subsequent facility staff challenges enhanced collaboration between the facility staff and the GNP.

### **Barriers**

The lack of awareness of the NP role in providing medical care for nursing facility residents impacted the progress of the project. This was mitigated somewhat through the implementation of the project as awareness grew as the project progressed. However, physician perception of role delineation between a RN and an APRN became a minor barrier. Although this only occurred with one physician, it did become clear that some physicians prefer to manage their patients independently.

The facility had limited ability to provide diagnostic testing and this did emerge as a barrier especially to preventing ER visits. In some instances the only way to obtain a diagnostic test (e.g. EKG) was to send the resident to the ER. Laboratory services proved to be another barrier. Routine service was only provided at the LTC once in the morning three days a week. If laboratory tests were required at other times then the facility nurses obtained the specimens. Subsequent transportation to the laboratory entailed either a facility member leaving the facility and driving to the laboratory or a laboratory technician picking the specimen up if they were nearby.

Although staffs' and physicians' perceptions of nursing skills were good, it did become obvious that some nurses were more comfortable with managing higher acuity residents than others. This issue was further complicated when HKHH residents needed higher acuity care on evening and night shifts when extra licensed staff were not on site to assist. The acuity of the residents became a barrier for some nurses and the perception survey results supported this assertion.

### **Expected vs. Actual Outcomes**

Outcomes were close to expected. However, the small sample size made interpretation of results challenging. Expected and actual outcomes for phase 1 were similar. Phase 2 actual outcomes required a larger sample size to extrapolate results. The staff perceptions of reason for transfers were underestimated and, therefore, the actual results were surprising. This suggests that more research into this area is warranted.

### **American Association of Colleges of Nursing Essentials**

The AACN Doctoral Essentials address the foundational competencies that are central to advanced nursing practice (American Association of Colleges of Nursing, 2006). Essential VIII was central to this Doctorate in Nursing Practice (DNP) project as it focused on advanced nursing practice by utilizing a NP in a collaborative care practice model (Essential VI), which improved the health outcomes for a population of LTC nursing facility residents (Essential VII). This project was underpinned conceptually by Gittels' theory of relational coordination and interventions were developed based on evidence in current literature (Essentials I and III). Essential II was also significant as the DNP project educated facility staff and required ongoing mentoring by the NP

involved. Advocacy was demonstrated by choosing to implement the project in a LTC nursing facility and choosing to engage in advanced nursing practice to improve health outcomes of an underserved population (Essential V). Patient care technology supported the use of the EMR for patient management, communication, and collaboration, in addition to data extraction for measurement of project outcomes (Essential IV). The AACN essentials and their relation to the DNP courses and project are summarized in table 5.1.

Table 5.1 *ACCN Essentials in Relation to DNP Courses and Project*

<b>ACCN Essential</b>	<b>DNP Courses and Project Demonstration of ACCN Essential</b>
<b>I: Scientific Underpinnings for Practice</b>	NURS 669 Introduction to Evidence Based Practice; NURS 761 Translational Science <ul style="list-style-type: none"> <li>Designed the DNP project based on a review of current literature</li> <li>Utilized Gittels theory of relational coordination as a conceptual framework for the projects implementation</li> </ul>
<b>II: Organizational and Systems Leadership for Quality Improvement and Systems thinking</b>	NURS 774 Leadership and Management in Nursing ;NURS 768 Advanced Clinical Economics and Finance <ul style="list-style-type: none"> <li>Promoted change through a collaborative care model</li> <li>Mentored nursing facility staff</li> </ul>
<b>III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice</b>	NURS 669 Introduction to Evidence Based Practice : NURS 760 Trends in Healthcare <ul style="list-style-type: none"> <li>Completed an extensive literature review and synthesis</li> <li>Utilized a logic model</li> <li>Developed measurable outcomes</li> </ul>
<b>IV: Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care</b>	ICS 614 Medical Informatics I <ul style="list-style-type: none"> <li>Utilized electronic databases for a literature review</li> <li>Utilized EMR for communication</li> <li>Utilized EMR for outcomes measurement</li> </ul>
<b>V: Health Care Policy for Advocacy in Health Care</b>	LAW 532 Health Law <ul style="list-style-type: none"> <li>Advocated for a underserved population by</li> </ul>



	implementing DNP project in a nursing facility <ul style="list-style-type: none"> <li>• Advocated for NP role in improving care in nursing facilities</li> </ul>
<b>VI: Interprofessional Collaboration for Improving Patient and Population Health Outcomes</b>	NURS 699 Program Evaluation <ul style="list-style-type: none"> <li>• Utilized a collaborative model of care for project implementation</li> <li>• Created change through leadership of a collaborative care model</li> <li>• Improved resident hospital admission outcomes</li> </ul>
<b>VII: Clinical Prevention and Population Health for Improving the Nation's Health</b>	NURS 765 Program Evaluation <ul style="list-style-type: none"> <li>• Implemented a collaborative care delivery model</li> <li>• Utilized a Logic Model</li> <li>• Analyzed outcome data related to project outcomes</li> <li>• DNP project prevented hospitalizations of a vulnerable population</li> </ul>
<b>VIII: Advanced Nursing Practice</b>	NURS 776 DNP Capstone <ul style="list-style-type: none"> <li>• Designed, implemented and evaluated therapeutic interventions for nursing facility residents</li> <li>• Developed and sustained therapeutic relationships with residents, MD's and facility staff</li> <li>• Demonstrated advanced levels of clinical judgment in evidence-based care of residents</li> <li>• Guided, mentored and supported facility nurses</li> <li>• Educated and guided facility staff</li> </ul>

## Limitations

This project had a number of limitations. It was limited by its small sample size and generalizability was limited by the project implementation only taking place in one nursing facility on Kaua'i. Time did prove to be a limiting factor during the implementation phase of the project due to the short time frame required for DNP project completion. This limited the number of residents who developed ACS conditions

during the project. Differing interdisciplinary definitions of collaboration limited the projects full implementation with one MD.

### **Interpretation and Implications of Findings**

The purpose of this DNP project was to develop, implement, and test the efficacy of a collaborative care practice model to reduce hospital admission of residents from a LTC facility. Collaboration is a significant factor in preventing admissions; however, these relationships take time to develop. Lack of knowledge of the nursing facility environment and regulations can impede full collaboration from facility staff and, therefore, a GNP with experience in such settings can be essential for successful collaborations in LTC settings.

Education of both facility staff and MDs about the NPs' role within the interdisciplinary team is necessary for successful implementation of a collaborative care model. Clear role delineation of registered and advanced practice nurses is critical and healthcare organizations administrative teams play a major role in ensuring MDs understand and value the differences.

The facility environment and services are also critical in enabling care of residents with ACS conditions to be provided in a nursing facility. There was a link between limited ability to provide diagnostic testing and ER visits. The availability of daily laboratory services is essential in preventing ER visits and subsequent hospital admissions. More licensed nurses in the evening and at night can also prevent admissions, especially in initial stages of a program if the nurses are new graduates or have no previous LTC nursing facility experience.

Nursing staff confidence in their professional ability to manage residents with ACS conditions in the facility has to be increased in order to reduce hospital admission rates. A number of factors seem to improve nurse confidence. Improving knowledge through the educational modules was one factor. The nurses also have to have trust that the NP is knowledgeable and competent in the care of the frail elderly residents in a LTC nursing facility. Nursing perception was clearly related to transfer to both the ER and hospital. However, changes to MDs' perceptions of nurses' ability to assess and manage ACS conditions were also a factor that needs to be addressed. This is difficult in today's litigious environment when the safest thing to do is transfer, especially if family wishes are considered.

The increased use of advance directives and open and regular discussions about code status, treatment and transfer can improve outcomes in relation to hospital admissions for ACS conditions. These discussions do occur upon admission to the facility and during resident care conferences. However, nurses' confidence in discussing difficult topics like end of life care may lead to avoidance of in depth discussions. Competency based staff education is needed to improve family understanding of care options and reasons for transfer. In addition, NP time needs to be devoted to meeting family, developing relationships and discussing care options throughout the continuum.

Clearly the DNP project demonstrated that physical presence of NP in the facility on a regularly scheduled basis does lead to the early identification of ACS conditions and the treatment of these in the facility. This does require a proactive approach by the NP. During the project, the NP made rounds, talked to nurses, reviewed communication tools etc. before determining resident visit schedules. Also, follow up conversations after

treatment initiation led to active and regular collaborations with the nursing staff. This requires the NP devote time to focus on developing collaborative relationships in addition to completing resident visits.

### **Plans for Dissemination**

The DNP project will be submitted to the DNP committee and the Graduate Division at the University of Hawai'i at Mānoa (UHM). It will then be subsequently published by Pro Quest. A final public presentation will take place in April 2018. It will also be given to the Vice President for Kaua'i Medical Clinic, as the direct supervisor of NPs in LTC nursing facilities. A copy will also be provided to the MDs who participated in the project. Lastly, the project will be presented at an annual meeting hosted by the LTC nursing facility administration. This meeting is attended by all MDs assigned to LTC facility residents, in addition to facility managers and some staff.

### **Summary**

A NP-MD collaborative care practice model can prevent avoidable hospitalizations of residents from LTC facilities. Other factors such as staff perceptions of the reasons for residents' transfers and staffs' comfort level with high acuity residents are significant factors in the decision to transfer. Staff in-services and ongoing mentoring of facility staff by a NP combined with NP primary care visits have the potential to reduce avoidable hospitalizations for ACS conditions.

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## Appendices

### Appendix A: Staff Perception Survey

Please take a few minutes to complete this survey about **resident transfers to the emergency room(ER) and hospital from your facility.**

Your input is very important to us.

Please circle.

I am a:

RN

LPN

Resident manager

### Reasons for transfer to the ER or hospital

Please indicate your level of agreement with the following statements

<b>Residents are transferred from this facility because :</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
The attending physician orders it				
The resident or family insists on transfer				
The resident has no advance directives or POLST on record				
The level of acuity of the resident requires a transfer				
The facility is not equipped to provide the ordered tests or treatment				
The facility/ floor is not staffed to provide the increased level of acuity				
The nursing staff are not skilled enough to provide the level of care the residents condition needs				
The nursing staff missed early signs and symptoms of an developing acute problem				
The attending physician did not begin treatment for acute signs and symptoms early enough				
The attending physician did not visit and assess the patient for the acute problem in a timely manner				
Communication between the attending physician and nursing staff is not effective				

## Satisfaction with resident transfers to the ER or hospital

Very	Satisfied	Dissatisfied	Very
Satisfied			dissatisfied

Overall, how satisfied are you that  
transfers to the ER and hospital from your  
facility are unavoidable?

Do you have any additional comments/suggestions about the resident transfers to the ER and hospital from your facility?

Please add them below.

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**Thank you for taking the time to complete this survey.**

## Appendix B: Collaboration Survey

### PROVIDER DEMOGRAPHIC INFORMATION: ☐ PHYSICIAN

Please complete this demographic information and send with your completed questionnaire.

**NAME:** \_\_\_\_\_

**GENDER:** ☐ MALE ☐ FEMALE      **AGE:** \_\_\_\_\_ YEARS

### EDUCATIONAL PREPARATION:

#### SPECIALITY:

☐ FAMILY PRACTICE      ☐ INTERNAL MEDICINE      ☐ GERIATRICS  
☐ OTHER: \_\_\_\_\_

#### EXPERIENCE:

MD: NUMBER OF YEARS IN PRACTICE \_\_\_\_\_

#### PREVIOUS EXPERIENCE WITH MD / NP COLLABORATION:

☐ YES      ☐ NO

IF "YES", LENGTH OF TIME \_\_\_\_\_ YEARS

WHERE? \_\_\_\_\_



## PROVIDER SELF-ADMINISTERED QUESTIONNAIRE: PHYSICIAN

NAME \_\_\_\_\_

Please answer the following two-part questionnaire. It is important that you respond to each statement.

### PART 1: MEASURE OF CURRENT COLLABORATION

Consider your current experience of collaborative practice between you and the nurse practitioner.

For each of the following questions, please circle the number that represents your **degree of agreement or disagreement** with each statement

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
STRONGLY AGREE	AGREE	SOME WHAT AGREE	NEUTRAL	SOME WHAT DISAGREE	DISAGREE	STRONGLY DISAGREE

**The nurse practitioner(s) and I:**

**Please circle your response**

Plan together to make decisions about the care for the patients      **1   2   3   4   5   6   7**

Communicate openly as decisions are made about patient care      **1   2   3   4   5   6   7**

Share responsibility for decisions made about patient care      **1   2   3   4   5   6   7**

Co-operate in making decisions about patient care      **1   2   3   4   5   6   7**

Consider both nursing and medical concerns in making decisions  
about patient care      **1   2   3   4   5   6   7**

Co-ordinate implementation of a shared plan for patient care      **1   2   3   4   5   6   7**

Demonstrate trust in the other's decision making ability in making      **1   2   3   4   5   6   7**

shared decisions about patient care

Respect the other's knowledge and skills in making shared                      1   2   3   4   5   6   7

decisions about patient care

Fully collaborate in making shared decisions about patient care                      1   2   3   4   5   6   7

## **PART 2: PROVIDER SATISFACTION IN CURRENT COLLABORATION**

Consider your current experience of collaboration between the nurse practitioner and physician.

For each of the following questions, please circle the number that represents your current level of **satisfaction** or **dissatisfaction**.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
VERY	SATISFIED	SOMEWHAT	NEUTRAL	SOMEWHAT	DISSATISFIED	VERY
SATISFIED		SATISFIED		DISSATISFIED		DISSATISFIED

**What is your current level of satisfaction with:**

**Please circle your response**

The shared planning that occurs between you and the                      1   2   3   4   5   6   7  
nurse practitioner(s) while making decisions about patient  
care

The open communication between you and nurse                      1   2   3   4   5   6   7  
practitioner(s) that takes place as decisions are about  
patient care

The shared responsibility for decisions made between you                      1   2   3   4   5   6   7  
and the nurse practitioner(s) about patient care

The cooperation between you and nurse practitioner(s) in                      1   2   3   4   5   6   7  
making decisions about patient care

The consideration of both nursing and medical concerns as decisions are made about patient care	1	2	3	4	5	6	7
The coordination between the you and nurse practitioner(s) when implementing a shared plan for patient care	1	2	3	4	5	6	7
The trust shown by you and nurse practitioner(s) in one another's decision making ability in making shared decisions about patient care	1	2	3	4	5	6	7
The respect shown by the you and nurse practitioner(s) in one and other's knowledge and skills	1	2	3	4	5	6	7
The amount of collaboration between you and nurse practitioner(s) that occurs in making decisions about patient care	1	2	3	4	5	6	7
The way that decisions are made between you and the nurse practitioner(s) about patient care; (that is with the decision making process, not necessarily with the decisions)	1	2	3	4	5	6	7
The decisions that are made between you and the nurse practitioner(s) about patient care	1	2	3	4	5	6	7

## Appendix C: Satisfaction Survey

### Facility Licensed Nursing Staff


Please take a few minutes to complete this survey about **the implementation of the Nurse Practitioner (Victoria Mathis) Collaborative Care Model** Program. Your input is very important to me. Please check the box.

	<b>Please indicate your level of agreement with the following statements</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
Identification of ACS conditions	I acquired knowledge to identify early signs and symptoms of ACS conditions				
	I am better prepared to use my critical thinking skills when assessing residents with ACS conditions.				
	I can identify early signs and symptoms of ACS condition				
Collaboration	I understand the APRN collaborative practice model				
	The APRN collaborated effectively with the licensed staff.				
	I collaborated effectively with the APRN.				
	The APRN/RN collaboration improved resident care and outcomes				
	The APRN and I had mutual respect for each other.				
	The APRN and I shared our knowledge when managing residents.				
	The APRN and I shared goals related to residents care and management.				
Communication	I am better prepared to communicate effectively with MD's/ APRNs about residents with ACS conditions.				
	I feel more confident when communicating with MD's/APRNs about residents with ACS conditions.				
	The APRN in the facility 2 days a week improved communication within the multidisciplinary team.				
Frequency of APRN visits	The APRN in the facility 2 days a week was appropriate for effective resident medical management.				
	I did not fax the participating MD's on those 2 days.				
	I did not call the participating MD's on those 2 days.				
	The APRN in the facility 2 days a week provided the RN's/LPN's with adequate medical provider support				

**Thank you for taking the time to complete this survey.**

## Appendix D: Sample In-service Handouts

Slide 1



**Preventing Hospitalizations from  
LTC Nursing Facilities**

**Module I: Urinary Tract Infections**

Victoria Mathis MSN, APRN-BC, CNE


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Slide 2



**Module I Learning outcomes**

1. Describe the role of the interdisciplinary team in preventing hospitalizations for the selected ACS conditions.
2. Discuss the basic pathophysiology of the following ACS condition.
3. Distinguish between early and late signs and symptoms of the following ACS condition.
4. Discuss the appropriate multidisciplinary diagnostic and treatment options for residents with the following ACS condition.
5. Discuss how advance directives and POLST impact hospitalization for the following ACS condition.
6. Demonstrate the ability to communicate effectively with the MD and NP in relation to residents with the following ACS condition.

a) **Urinary Tract Infections**

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Slide 3

### Interdisciplinary team

- The approach that works best in nursing facilities
- Collaboration between disciplines is key
- Collaboration is based on :
  - Mutual respect
  - Shared Knowledge
  - Shared goals
- Improvements in the quality of care and resident outcomes

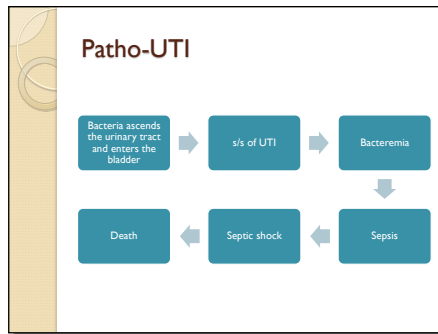
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Slide 4



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Slide 5

### Case Study

- Mrs Souza is a 88 year old female resident of a nursing facility. She ambulates with x1 assist and feeds her self with meals after assist with set up. She enjoys playing bingo and singing in activities and loves to talk story.

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Slide 6

Early s/s	Late s/s
<ul style="list-style-type: none"><li>• Changes in character of urine</li><li>• Appetite changes</li><li>• Mild changes in behavior , ambulation</li><li>• Low grade fevers</li><li>• Frequency, urgency</li><li>• Hematuria, dysuria</li></ul>	<ul style="list-style-type: none"><li>• Nausea &amp; vomiting</li><li>• Lethargy</li><li>• Agitation</li><li>• Falls</li><li>• Fever &gt; 100</li><li>• Poor or No PO intake</li><li>• Hypotension</li><li>• Tachycardia</li><li>• Tachypnea</li></ul>
<b>Signs and symptoms of UTI's</b>	

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Slide 7

	<b>RN Assessment</b> <ul style="list-style-type: none"><li>• <b>Early</b><ul style="list-style-type: none"><li>• What would you assess on your shift?</li><li>• Where would you gather other info from?</li><li>• What questions would you ask and from whom?</li></ul></li><li>• <b>Late</b><ul style="list-style-type: none"><li>• What would you assess on your shift?</li><li>• Where would you gather other info from?</li><li>• What questions would you ask and from whom?</li></ul></li></ul>
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Slide 8

Early	Late
<ul style="list-style-type: none"><li>• UA c&amp;s</li><li>• Labs</li><li>• PO abx</li><li>• PO fluids</li><li>• VS</li><li>• Q shift focused assessment<ul style="list-style-type: none"><li>◦ Focused on residents s/s</li><li>◦ System assessment</li><li>◦ Pertinent negatives</li><li>◦ Tx tolerance</li><li>◦ System based signs of worsening condition</li></ul></li></ul>	<ul style="list-style-type: none"><li>• UA c&amp;s</li><li>• Labs</li><li>• IV abx</li><li>• IV fluids</li><li>• VS</li><li>• LOC change to SNF</li><li>• Q shift focused assessment<ul style="list-style-type: none"><li>◦ Focused on residents s/s</li><li>◦ Systems assessment</li><li>◦ Pertinent negatives</li><li>◦ Tx tolerance</li><li>◦ Signs of worsening condition</li></ul></li></ul>
<b>Diagnosis and Treatment options</b>	

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Slide 9

Early	Late
<ul style="list-style-type: none"><li>• Treatment usual and reasonable for most residents</li><li>• Palliative care: advance directive may not want any ABX tx</li><li>• Transfer to ER should not be required</li></ul>	<ul style="list-style-type: none"><li>• Transfer decision making will include:<ul style="list-style-type: none"><li>• Code Status</li><li>• Treatment in facility or not</li><li>• Advance directives: type of treatment</li><li>• Patients condition</li><li>• Review residents chart if you are unsure</li></ul></li></ul>

**Advance directives & POLST**

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Slide 10

**RN assessment**

- **Early**
  - What would you assess on your shift?
  - Where would you gather other info from?
  - What questions would you ask and from whom?
- **Late**
  - What would you assess on your shift?
  - Where would you gather other info from?
  - What questions would you ask and from whom?

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Slide 11

**Interdisciplinary communication**

- MD/NP
  - Present the resident in a organized focused manner
  - Focused assessment
    - Focused on residents s/s
    - Pertinent negatives
    - VSS
    - Hx
  - Anticipate and/ or request orders
- RN/LPN shift to shift report
- Chart documentation

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Slide 12



### Interdisciplinary communication

- Why are you calling me?
- Mrs Souza has had a low grade fever since 8/3. She is making frequent requests for BR and voiding small amounts of cloudy urine. Her appetite is less than normal, and she refused to go to activities this am. BP 110/70 P 82 T 100.5, R 24. Abd: soft non tender, +ve BS
- What orders might you anticipate or request?


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Slide 13



### Interdisciplinary communication

- How is Mrs. Souza doing?
- Abx started on 8/4 for UTI. Resident tolerating abx well, no n/v, diarrhea. Voiding good volumes of clear urine, no frequency. Appetite good: 50-75% of food and fluids. Abd: soft non tender, +ve BS. Attended activities this am. BP 115/73, P 80, T 99.4, R 22.
- What does this note/report tell you?

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## **Appendix E: Sample Module Learning Outcomes**

### **MODULE 1**

- **Multidisciplinary Team**
- **Urinary Tract Infections**

#### **Module Learning Outcomes:**

1. Describe the role of the multidisciplinary team in preventing hospitalizations for the selected ACS conditions.
2. Discuss the basic pathophysiology of the following ACS condition.
3. Distinguish between early and late signs and symptoms of the following ACS condition.
4. Discuss the appropriate interdisciplinary diagnostic and treatment options for residents with the following ACS condition.
5. Discuss how advance directives and POLST impact hospitalization for the following ACS condition.
6. Demonstrate the ability to communicate effectively with the MD and NP in relation to residents with the following ACS condition.

#### **a) Urinary Tract Infections**

## **Appendix F: Sample Pre and Post Tests**

### **Module 1 Urinary tract infection (UTI)**

#### **Pre test**

1. List 2 signs and symptoms of UTI in a geriatric client.
2. If a UTI is not treated it can lead to:
  - a. Coma
  - b. Myocardial infarction
  - c. Sepsis
  - d. Pneumonia
3. Diagnostic treatment options for a UTI would most likely include:
  - a. UA c&s
  - b. Renal ultrasound
  - c. Chest X ray
  - d. Basic metabolic panel
4. Which of the following would be most appropriate assessment and treatment for a resident with a UTI (Select all that apply)
  - a. Increase PO fluids
  - b. Timed toileting
  - c. Respiratory assessment
  - d. PO antibiotics
  - e. Vital signs q shift
5. List 2 things you would communicate to the MD/NP if you assessed signs and symptoms of a UTI in a resident.

Module 1 Urinary tract infection (UTI)  
Post test

1. What complication of a UTI could lead to transfer to the ER and hospitalization?
2. Treatment for a resident with late signs and symptoms of a UTI would most likely include:
  - a. IV fluids
  - b. Clear liquid diet
  - c. Soft diet
  - d. NPO
3. Diagnostic options for a UTI would most likely include a:
  - a. HBA1C
  - b. Complete metabolic panel
  - c. CBC
  - d. Basic metabolic panel
4. Which of the following are likely to be late signs and symptoms of a UTI in a geriatric client?  
(Select all that apply)
  - a. Low grade fever
  - b. Hypotension
  - c. Tachycardia
  - d. Fever >100.5
  - e. Cloudy urine
5. List 2 things you would communicate to the MD/NP if you assessed signs and symptoms of a UTI in a resident.